Application No.10/014,620
Filed: November 9, 2001
TC Art Unit: 2663
Confirmation No.: 1439

REMARKS

In response to an Office Action mailed on August 23, 2005, Applicant respectfully requests that the Application be reconsidered in light of the following remarks.

The Examiner rejected claims 1, 2 and 4-8 under 35 U.S.C. 102(e) as being anticipated by US Pat. No. 6,560,654 to Fedyk ("Fedyk"). The Examiner rejected claims 3 and 9 under 35 U.S.C. 103(a) as being obvious over Fedyk in view of US Patent Application Publication No. US 2002/0141345 to Szviatovszki, *et al.* ("Szviatovszki").

Fedyk discloses selecting a path through a "link state routing network." Such a network comprises nodes (such as routers) connected to each other by links. If a source node wishes to establish a path through the network to a destination node, the source sends a setup message along the path towards the destination to determine if sufficient resources are currently available along the path. The setup message includes bandwidth, latency, etc. requirements for the path. In order to establish the path, all the links along the path must have the required amount of bandwidth available, meet the latency requirements, etc. In addition, intervening nodes along the path must have sufficient resources (such as "labels," one label per node per path) available. (Column 4, line 48-67.)

The setup message is sent serially through some or all of the intervening nodes. If any intervening node detects that the proposed path does not meet the source node's requirements, the intervening node sends a negative feedback message to the source, and the intervening node does not forward the setup message to the next node along the path. When the source receives the negative feedback message, the source selects a different path and sends another setup message along the newly selected path. (Column 5, line 10-25 and lines 32-37; and column 6, line 7-11.)

On the other hand, if the setup message is successfully forwarded by all the intervening nodes to the destination, the destination sends a positive feedback message to the source, and the path is established. (Column 5, line 37-42; column 6, line 11-15.)

Szviatovszki also discloses path determination in a data network.

In contrast, the disclosed and claimed invention is not related to sending a message along a proposed path to determine if sufficient resources are currently available along the path. Instead, the

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PAGE 7/11 * RCVD AT 9/27/2005 3:48:51 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-6/31 * DNIS:2738300 * CSID:6176950892 * DURATION (mm-ss):02-42

disclosed and claimed method enables a first router in a network to identify a link in the network and to request other routers in the network to notify the first router if the link changes state.

In the invention recited in claim 1, a first router generates a node state advertisement that identifies the router and a link about which the first router desires to receive link state information. The first router floods the node state advertisement throughout a routing area to a plurality of other routers. Each of the routers that receives the node state advertisement determines if the receiving router lies along a path meeting a predetermined criteria between the link and the first router. Each router that is determined to lie along such a path maintains an association between the link and the first router. The association indicates that link state advertisements concerning the link are to be forwarded along the path towards the first router. Upon a change of state of the link, the router (which was determined to lie along such a path between the link and the first router) sends a link state advertisement along the path towards the first router.

As recited in claim 1, the first node generates a "node state advertisement" that "identif[ies] the first router and a link about which the first router desires to receive link state information." (Emphasis added.) Fedyk's setup message is not analogous to the recited "node state advertisement," because Fedyk's setup message does not identify a particular link. Fedyk's setup message applies to all the links along the path between Fedyk's source and Fedyk's destination. For example, Fedyk's setup message includes a minimum amount of bandwidth required "between any two intervening nodes 16" along the path. (Column 4, lines 61-66; emphasis added.)

Furthermore, Fedyk does not flood the setup message "throughout the routing area so as to ensure that substantially all of the plurality of routers receive the node state advertisement," as recited in claim 1. Fedyk's source node sends the setup message to only the first intermediate node along the path. At most, the setup message is forwarded to only the intermediate nodes along the path to the destination. (Column 5, lines 10-18.) In addition, the feedback message is sent as a "point-to-point" message to the source, without flooding the network. (Column 5, line 25-31.)

Fedyk does not disclose or suggest "at each of the routers receiving the node state advertisement, determining whether the receiving router lies along a path meeting a predetermined criteria between the link and the first router," as recited in claim 1. (Emphasis added.) Fedyk's intermediate nodes cannot make such a determination, because Fedyk's setup message does not

PAGE 8/11 * RCVD AT 9/27/2005 3:48:51 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-6/31 * DNIS:2738300 * CSID:6176950892 * DURATION (mm-ss):02-42

identify a link. Furthermore, there is no need for Fedyk's intermediate nodes to determine if the setup message applies to a particular intermediate node, because Fedyk's setup message is sent to only nodes along the path between the source and the destination. That is, the setup message is relevant to all the intermediate nodes that receive the setup message.

Fedyk's intermediate node cannot "maintaining an association between the link and the first router," as recited in claim 1, because Fedyk's setup message does not identify a link. (Emphasis added.) In addition, once Fedyk's intermediate node either sends a negative feedback message to the source or forwards the setup message to the next node along the path, the intermediate node has no need to maintain an "association indicating that link state advertisements concerning the link are to be forwarded along the path towards the first router," as further recited in claim 1, because Fedyk relies on conventional link state advertisements ("LSA") to update the routing database in the source. (Column 5, line 62-67.)

Furthermore, conventional LSAs are broadcast ("flooded") to all routers in an area, whereas claim 1 recites, "the association indicating that link state advertisements concerning the link are to be forwarded along the path toward the first router." (Emphasis added.)

In addition, Fedyk does not disclose or suggest, "upon a change of the state of the link, forwarding a corresponding link state advertisement to an adjacent one of the routers along the path toward the first router," as recited in claim 1. (Emphasis added.) As noted, Fedyk's setup message does not identify a link. Fedyk does not disclose detecting a change in the state of a link. Furthermore, as noted, Fedyk relies on flooding LSAs; Fedyk does not disclose sending a link state advertisement along the path toward the first router.

No art of record, either alone or in combination, discloses or suggests a method of propagating link state information in a routing area of a network that includes "generating a node state advertisement at a first router of the plurality of routers, the node state advertisement identifying the first router and a link about which the first router desires to receive link state information; flooding the node state advertisement throughout the routing area so as to ensure that substantially all of the plurality of routers receive the node state advertisement; at each of the routers receiving the node state advertisement, determining whether the receiving router lies along a path meeting a predetermined criteria between the link and the first router; and at each of at least one

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PAGE 9/11 * RCVD AT 9/27/2005 3:48:51 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-6/31 * DNIS:2738300 * CSID:6176950892 * DURATION (mm-ss):02-42

second router determined to lie along such a path, (1) maintaining an association between the link and the first router, the association indicating that link state advertisements concerning the link are to be forwarded along the path toward the first router, and (2) upon a change of the state of the link, forwarding a corresponding link state advertisement to an adjacent one of the routers along the path toward the first router," as recited in claim 1. For at least this reason, claim 1 is believed to be allowable.

Claims 2-6 depend directly or indirectly from claim 1. Claims 2-6 are, therefore, believed to be allowable, for at least the reasons discussed above with respect to claim 1.

Claim 7 includes recitations similar to those discussed above with respect to claim 1. Claim 7 is, therefore, believed to be allowable, for at least the reasons discussed above with respect to claim 1. Claims 8 and 9 depend directly from claim 7. Claims 8 and 9 are, therefore, believed to be allowable, for at least the reasons discussed above with respect to claim 7.

PAGE 10/11 * RCVD AT 9/27/2005 3:48:51 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-6/31 * DNIS:2738300 * CSID:6176950892 * DURATION (mm-ss):02-42

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For all the foregoing reasons, it is respectfully submitted that the present Application is in a condition for allowance, and such action is earnestly solicited. The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite allowance of the present Application.

Respectfully submitted,

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PAGE 11/11 * RCVD AT 9/27/2005 3:48:51 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-6/31 * DNIS:2738300 * CSID:6176950892 * DURATION (mm-ss):02-42